Wisconsin

I. General Comments (WDNR, Elected Officials, Industry, and Citizen Stakeholders)
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I. General Comments (WDNR, Elected Officials, Industry, and Citizen Stakeholders)

Comment: Commenters 0285 and 0309 submitted comments in support of revisiting or delaying the 2015 NAAQS.

Response: On October 1, 2015, EPA revised the 8-hour primary and secondary National Ambient Air Quality Standards for ozone by lowering the level from 75 parts per billion (ppb) to 70 ppb. Section 107(d) of the Clean Air Act requires EPA to issue designations no later than 2 years after the agency sets a new National Ambient Air Quality Standard or revises an existing standard. The Administrator may extend this deadline up to 1 year, if there is insufficient information to designate areas by the 2-year deadline. Revisiting or delaying the designations for the 2015 ozone NAAQS is beyond the scope of this action.

Comment: Commenters 0264 and 0255 submitted comments in support of EPA revoking the 2008 NAAQS.

Response: Revoking the 2008 ozone NAAQS is beyond the scope of this action.

Designate the entire state attainment or only narrow parcels of nonattainment land around the violating monitors using a distance from shoreline approach and the ordinary high water mark

Comment: The Wisconsin Department of Natural Resources (WDNR), Commenter 0300, as identified by the last four digits of its identification number in the docket, and Governor Walker (0310) submitted comments asking EPA to foremost consider designating the entire state as attainment of the 2015 ozone NAAQS as per the Governor's original September 21, 2016, recommendation, since WDNR believes ozone levels in Wisconsin are beyond the state's control due to out-of-state emissions and meteorology. If EPA does not designate the entire state as attainment, then WDNR (0300) urges EPA to only designate as nonattainment narrow parcels of land near the Lake Michigan shoreline around the violating monitors (essentially dismissing any contribution analysis), since WDNR believes these monitors are not meaningfully affected by in-state emissions.[1] For these reasons, U.S. Congressman F. James

[1] In a September 21, 2016, letter to EPA from its Governor, Wisconsin recommended that the entire state be designated as attainment for the 2015 ozone NAAQS, despite having violating monitors, since, in Wisconsin's opinion, elevated ozone levels in Wisconsin are primarily due to emissions originating from other states, recent ozone levels in Wisconsin have greatly improved, and Wisconsin has already significantly reduced ozone-causing emissions. Later in an April 20, 2017, technical support document (TSD), WDNR submitted to EPA additional

Sensenbrenner Jr. of Wisconsin (0285) would also like EPA to consider reducing the scope of EPA's intended nonattainment designations in Wisconsin and believes pollution from beyond Wisconsin's borders should be accurately accounted for, especially as it pertains to monitors located along Lake Michigan.

In its April 2017, technical support document (TSD), WDNR provided a geographic estimate of areas experiencing nonattainment air (i.e. with design values > 70 ppb) based on an estimate of a "70 ppb ozone contour line" near the shoreline of Lake Michigan. WDNR's 70 ppb contour is based on a best-fit line developed by plotting the design values of six of the eight violating monitors and one of the four attainment monitors located within four miles of the Lake Michigan shoreline versus the location of each of these seven monitors expressed as distance in miles from the shoreline of Lake Michigan. The extent of this 70 ppb contour was described in WDNR's April 2017 TSD and again in WDNR's comment letter (0300), which included specific modifications to the location of the 70 ppb contour in Racine County (4.2 miles inland) and in Sheboygan County (2.3 miles inland) relative to WDNR's original recommendations regarding these counties provided in its April 2017 TSD.

As a starting point for the distance from the lakeshore going inland, WDNR suggested EPA use the U.S. Army Corps of Engineers (USACE) Ordinary High Water Mark (OHWM), which for Lake Michigan is 581.5 feet, and cited the USACE website for the Detroit District's Regulatory Office.[2] According to WDNR the USACE OHWM is permanent (e.g., it does not change based on water level fluctuations), is legally-defined, can be easily identified, and is already widely-used used in federal regulatory applications.

Response: Ozone is a secondary pollutant formed by photochemical reactions involving the primary precursor pollutants, volatile organic compounds (VOCs) and oxides of nitrogen (NO_x). There is no basis for the idea that Wisconsin precursor emissions are not contributing to ozone detected at the violating monitors in Wisconsin. Any emissions of NO_x and VOC have the potential to photochemically react to form ozone. Studies published in the peer-reviewed scientific literature show that single sources of ozone precursor emissions can have measureable nearby downwind ozone impacts.[3,4] Maximum impacts typically occur within 50-100 km (31-62 miles) from the source and can occur up to 200 km (124 miles) away from the source. Actual sources[3] and hypothetical single sources[4] have been analyzed for their potential downwind ozone impacts. As a high-end example, a hypothetical source in northern Illinois emitting 500 tons per year (tpy) of NO_x can have a maximum 8-hour average downwind ozone

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information to support the Governor's recommendation including estimates of the geographic extent of the areas in Wisconsin with design values above 0.070 ppm (70 ppb). Wisconsin requested that if EPA designates nonattainment areas in Wisconsin, the EPA should ensure that the geographic scope of these areas is minimized. Wisconsin emphasized in its April 20, 2017, submittal that these descriptions should not be construed as a recommendation for a potential nonattainment area designation for the 2015 ozone NAAQS.

[2] http://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Links/Ordinary-High-Water-Mark-and-Low-Water-Datum/

[3] Baker, K. R. and Kelly, J. T.: Single source impacts estimated with photochemical model source sensitivity and apportionment approaches, Atmospheric Environment 96, 266-274, 2014.

[4] Baker, K. R., Kotchenruther, R. A., and Hudman, R. C.: Estimating ozone and secondary PM2.5 impacts from hypothetical single source emissions in the central and eastern United States, Atmospheric Pollution Research, 7, 122-133, 2016.

impact of 3.88 ppb.[5] As a lower end example, a hypothetical source in northwest Indiana emitting 500 tpy of NO_x can have a maximum 8-hour downwind ozone impact of 1.15 ppb.[6] Wisconsin precursor emissions are well above 500 tpy regardless of the Wisconsin county under analysis.

Ozone formation chemistry has been well-studied for several decades and the body of scientific literature on ozone pollution is extensive, growing, and becoming more refined each year. However, the many nuances of ozone pollution formation, transport, and reduction strategies are complex and scientific research designed to answer the ever more specific questions about these topics is ongoing, particularly with respect to how local scale meteorology like the land/lake breeze can influence ozone production and transport. Since Wisconsin is adjacent to a large body of water, Wisconsin experiences land/lake breeze meteorology, which is described in more detail in EPA's 120-day TSD. There are several studies involving Lake Michigan ozone[7, 8, 9, 10, 11, 12, 13, 14, 15, 16] including a recent study in 2017,[17] for which the data collected is currently being analyzed. Such a wealth of data was collected during this 2017 study, that it could sustain many years' worth of analyses and scientific research. WDNR, EPA, and many

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[5] EPA's Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program. Draft for Public Review and Comment. December 2, 2016.

[6] EPA's Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program. Draft for Public Review and Comment. December 2, 2016.

[7] Lyons, W. A. and Cole, H. S., Fumigation and plume trapping on the shores of Lake Michigan during stable onshore flow, J. Appl. Meteor., 12, 494–510, 1973.

[8] Lyons, W. A. and Cole, H. S.: Photochemical oxidant transport–mesoscale lake breeze and synoptic-scale aspects, J. Appl. Meteor., 15, 733–743, 1976.

[9] Sillman, S., Samson, P. J., and Masters, J. M.: Ozone formation in urban plumes transported over water: photochemical model and case studies in the northeastern and midwestern U.S., J. Geophys. Res., 98, 12687–12699, 1993.

[10] Lyons, W. A., Pielke, R. A., Tremback, C. J., Walko, R. L., Moon, D. A., and Keen, C. S.: Modeling impacts of mesoscale vertical motions upon coastal zone air pollution dispersion, Atmos. Environ., 29, 283–301, 1995a.

[11] Lyons, W. A., Tremback, C. J., and Pielke, R. A.: Applications of the Regional Atmospheric Modeling System (RAMS) to provide input to photochemical grid models for the Lake Michigan Ozone Study (LMOS), J. Appl. Meteor., 34, 1762–1786, 1995b.

[12] Cleary, P. A., Fuhrman, N., Schulz, L., Schafer, J., Fillingham, J., Bootsma, H., McQueen, J., Tang, Y., Langel, T., McKeen, S., Williams, E. J., and Brown, S. S.: Ozone distributions over southern Lake Michigan: comparisons between ferry-based observations, shoreline-based DOAS observations and model forecasts, Atmos. Chem. Phys., 15, 5109–5122, 2015.

[13] Dye, T. S., Roberts, P. T., and Korc, M. E.: Observations of transport processes for ozone and ozone precursors during the 1991 Lake Michigan Ozone Study, J. Appl. Meteorol., 34, 1877–1889, 1995.

[14] Foley, T., Betterton, E. A., Jacko, P. E. R., and Hillery, J.: Lake Michigan air quality: The 1994–2003 LADCO Aircraft Project (LAP), Atmos. Environ., 45, 3192–3202, 2011.

[15] Hanna, S. R. and Chang, J. C.: Relations between meteorology and ozone in the Lake Michigan region, J. Appl. Meteorol., 34, 670–678, 1995.

[16] Lennartson, G. J., and Schwartz, M. D.: A synoptic climatology of surface-level ozone in Eastern Wisconsin, USA, Climate Research, 13, 207-220, 1999.

[17] Pierce, B., Kaleel, R., Dickens, A., Bertram T., and Stanier, C., Kenski D.: White Paper: Lake Michigan Ozone Study 2017 (LMOS 2017), http://www.ladco.org/, 2016.

other parties[18] are collaborators in this research effort. Yet, in the present moment, nuances of ozone formation and transport are not fully understood. The relative role of local emissions versus regional emissions and the relative role of local scale meteorology (e.g. land/lake breeze) versus synoptic (regional) scale meteorology cannot currently be accurately and definitively quantified. Estimates are possible and various technical analyses can and are being conducted to provide evidence and insight into these topics. Wisconsin has provided such estimates and technical analyses; however, Wisconsin has, to some extent, misused, selectively used, and/or drawn improper and unsupported conclusions from the scientific information in an attempt to justify attainment or minimal nonattainment areas in Wisconsin with respect to the 2015 ozone NAAQS. This portion of the response to comments document attempts to address as thoroughly as possible the comments received from Wisconsin and other parties regarding EPA's intended area designations for the state of Wisconsin.

There are several flaws with respect to the technical merits of WDNR's geographic estimate of nonattainment air. In generating a best-fit line to the design values of six of the eight violating monitors and one of the four attaining monitors located within four miles of the Lake Michigan shoreline as a function of the location of each of these monitors expressed as the distance in miles from the Lake Michigan shoreline, Wisconsin has the appearance of "cherry-picking" a total of eight data points to achieve a desired result (a narrow 70 ppb contour). Wisconsin provides an explanation for why it excluded specific monitors from its best-fit line indicating that some of the monitors do not fall on the best-fit line since ozone formed over the lake is not the only source of ozone to these monitors, that these monitors also receive ozone transported from over land. There is no conclusive evidence to suggest that any monitor in Wisconsin is impacted exclusively from ozone formed over the lake. Wisconsin explains that the two attaining monitors in Milwaukee were excluded from Wisconsin's best-fit line since these monitors are impacted by "urban effects" of ozone chemistry, to which Wisconsin is referring to NO_x scavenging.[19] Wisconsin seems to indicate that ozone over the lake is exclusively formed by out-of-state precursor emissions. This is not true. Wisconsin precursor emissions can be transported over land and/or over the lake and result in ozone being formed and delivered to downwind areas in Wisconsin. Evidence of this will be further discussed later, but to elaborate here, Wisconsin precursor emissions can be transported over the lake with the morning land breeze, where they can combine with out-of-state precursor emissions to react to form ozone, which can flow back onshore with the afternoon/evening lake breeze to downwind areas in Wisconsin. Note that an observable land/lake breeze does not occur every day; over land transport of both in-state and out-of-state precursor emissions can also form ozone in Wisconsin. EPA HYSPLIT trajectories indicate that Wisconsin's violating monitors receive ozone both from over land and from over the lake. There is no evidence to suggest that the monitors Wisconsin used to develop its best-fit line are receiving ozone

[18] including the National Aeronautics and Space Administration (NASA), university research groups with funding from the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA), the Electric Power Research Institute (EPRI), etc.

[19] High NO_x concentrations found in downtown metropolitan areas, especially near busy streets and roads, and in power plant plumes, there is scavenging (sometimes referred to as titration) of ozone by reaction with nitric oxide (NO) to form nitrogen dioxide (NO_2) leading to localized depletion of ozone. However, as urban plumes are transported and diluted, this NO_2 can lead to photochemical production of ozone downwind of the source areas. EPA (2013) Integrated Science Assessment for Ozone and Related Photochemical Oxidants. http://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=511347 .

exclusively from over the lake nor that ozone coming exclusively from over the lake contains ozone formed by precursor emissions originating exclusively from out-of-state.

Wisconsin's implicit assumption in developing its 70 ppb contour is that ozone is somewhat uniform in its distribution going from the shoreline inland. While it is true that ozone generally decreases with increasing distance from the shoreline in the state of Wisconsin, as evidenced by ozone monitoring data, this trend is by no means uniform, consistent, or completely predictable. Ozone production and transport varies from day to day with varying magnitudes of precursor emissions and varying meteorology, among other factors. A static 70 ppb contour does not exist in reality. Further, each portion of the eastern Wisconsin shoreline is different in terms of its magnitude of precursor emissions. For instance, the Milwaukee/Waukesha urban area releases a greater magnitude of emissions than the single county areas of Sheboygan and Manitowoc. Ozone monitors in urban core areas like Milwaukee/Waukesha generally measure lower ozone than monitors sited downwind of urban core areas. For example, there are ozone monitors located in the precursor origin cities of Milwaukee and Waukesha that are attaining the 2015 ozone NAAQS based on 2014-2016 data, and several monitors located downwind of these precursor originating urban areas that are violating the standard.[20] The two Milwaukee urban core attaining monitors are near the lakeshore. Wisconsin omitted these two attaining monitors from its best-fit line. Fortuitously, by applying a power fit to a select number of monitors as a function of distance from shoreline, the correlation coefficient, R^2, is 0.972, which makes Wisconsin's analysis, at first glance, appear as if there is a simple (and strong) relationship between the ozone monitor data as a function of distance from shoreline. This relationship is misleading since it does not consider local precursor emissions sources and locations relative to downwind violating monitors. In many cases, as in the case of Milwaukee/Waukesha, the urban core area is the geographic origin of much of the local precursor emissions responsible for forming ozone. In the 5-county Milwaukee intended area, the most densely concentrated emissions sources across all emissions sectors are concentrated in the Milwaukee and Waukesha urban areas. Ozone takes time to form, and the highest concentrations tend to form downwind of the origin of the precursor emissions (unless trapped in an airshed with a geographic feature limiting downwind transport, e.g. a valley ringed by mountains, which is not the case for any of the Wisconsin areas). Therefore, it is not surprising that the monitors located near the heart of these urban areas (where a substantial quantity of precursor emissions originate) detect lower ozone values compared to the monitors located downwind of these urban areas, which detect the ozone that can be formed as the local precursor pollutants react to form ozone while flowing downwind. It is also important to note, that where there are high NO_x concentrations found in downtown metropolitan areas, especially near busy streets and roads, and in power plant plumes, there can be scavenging (sometimes referred to as titration) of ozone by reaction with nitric oxide (NO) to form nitrogen dioxide (NO_2) leading to localized depletion of ozone. However, as urban plumes are transported and diluted, this NO_2 can lead to photochemical production of ozone downwind of the

[20] Waukesha County has an attaining monitor near the center of the City of Waukesha with a 2014-2016 design value of 66 ppb. Milwaukee County has three monitors— (1) an attaining monitor (64 ppb) near the center of the City of Milwaukee, (2) another attaining monitor (68 ppb) about 3 miles north and slightly east (i.e. downwind) of the first monitor, but still in the City of Milwaukee, and (3) a violating monitor (71 ppb) downwind of the first two monitors sited in the northeastern corner of the county about 8 miles north and slightly east of the second monitor and about 12 miles northeast (i.e. downwind) of the center of the City of Milwaukee. There are two additional violating monitors (71 ppb and 73 ppb, respectively) farther to the north and generally downwind located in Ozaukee County.

source areas. Therefore, these Milwaukee/Waukesha monitor data are consistent with the scientific understanding of ozone impacts being observed downwind of the origin of nearby precursor emissions. These monitor data are also consistent with the conceptual model of land/lake breeze ozone formation and transport.[21]

While there is evidence showing that a relatively large amount of precursor emissions originating from out-of-state are causing an ozone impact at the Wisconsin monitors, there is also evidence that precursor emissions originating in the state of Wisconsin are forming ozone in Wisconsin as well.[22] Wisconsin's distance from the shoreline method of estimating the geographic extent of nonattainment air based on its 70 ppb contour and conclusion that in-state emissions do not meaningfully contribute to ozone at violating monitors in Wisconsin is not consistent with the conceptual and practical understanding of ozone formation in urban areas, such as the Milwaukee/Waukesha area. Wisconsin's method of delineating the geographic extent of nonattainment areas is predicated on Wisconsin's incorrect determination that Wisconsin precursor emissions do not meaningfully contribute to ozone at violating monitors in Wisconsin. For the reasons discussed above, Wisconsin's best-fit line is not a valid basis for delineating nonattainment areas in Wisconsin. Wisconsin's distance from shoreline approach is overly simplistic and not appropriate for determining the geographic extent of nonattainment areas in Wisconsin, since it does not consider the ozone contribution from in-state precursor emissions, particularly those originating from Wisconsin's urban core areas.

Another piece of information that is misleading in perpetuating the idea of a somewhat uniform and predictable ozone gradient from the shoreline inland is Figure 4.1 of WDNR's April 2017 TSD. Commenters 0244 and 0259 refer to photochemical modeling (LADCO Figure 4.1 in WDNR's April 2017 submittal) showing a gradient where ozone decreases from the shoreline inland as evidence supporting a smaller nonattainment area for the Milwaukee area. Additionally, Door County commenter (0235) indicates, "The photochemical model projections of 2017 design values along the western Lake Michigan shoreline prepared by LADCO project the entire Door County land mass to be outside of the nonattainment area. (See: Figure 4.1 at page 16 of DNR's Technical Support Document.)"

It is not clear from the description how Figure 4.1 in WDNR's April 2017 TSD was generated and what the underlying data is, but it is clear that this figure is for illustrative purposes only. Therefore, it should not be used for decision making purposes. It is also worth noting that despite the lack of information on the underlying data upon which this figure was based, if it is based on EPA's modeling platform, which it likely is, then it is worth noting that while the platform generally performs well, it systematically under-predicts ozone design values at monitoring locations near the shoreline around Lake Michigan. As explained above, it is true that ozone generally tends to decrease when going inland from the lakeshore

[21] In which precursor pollutants can flow out over the lake with the land breeze and become trapped in a shallow inversion layer over the lake where they photochemically react during the day to form ozone. As the inversion breaks up and the (typically afternoon time) lake breeze carries the ozone-rich air back toward the shore, the downwind monitors detect the ozone. Monitors located downwind of precursor origin cities (e.g. Milwaukee/Waukesha) and near the shoreline are well-sited to pick up the highest concentrations of ozone, to which the local population may be exposed.

[22] The topic of the relative contribution of in-state versus out-of-state emissions impact on ozone detected at the violating monitors in Wisconsin is addressed in more detail in the source apportionment modeling comment summary and response section.

in eastern Wisconsin, however Wisconsin's 70 ppb contour estimate alone is not valid for delineating nonattainment areas in Wisconsin.

Here we address the feasibility of Wisconsin's suggestion of using the OHWM to delineate a distance inland from the shoreline rather than EPA's intended nonattainment areas, which are delineated by county boundaries and, in some cases, roadways. The federal high water mark for Lake Michigan is currently set at 581.5 feet.[23] The USACE OHWM is a jurisdictional benchmark for administering its regulatory program in navigable waterways under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. The OHWM is the line on the shore coincident with the elevation contour that represents the approximate location of the line on the shore established by fluctuations of water and indicated by physical characteristics such as shelving, destruction of terrestrial vegetation, presence of litter or debris, or changes in the character of soil. Wisconsin did not provide details on the Wisconsin OHWM and only referenced the federal OHWM via the link to the USACE Detroit District's Regulatory Office without providing additional details or maps depicting what Wisconsin's areas would look like if they were to be based upon the federal OHWM for Lake Michigan. Whether using the federal OHWM or simply using a standard map of the shoreline, a distance inland to delineate a nonattainment area is problematic, since the distance inland might bisect individual source facilities, thus making it difficult to regulate which part of the source is in the nonattainment area and which part of the source is outside of the nonattainment area. With roadways, it is clear as to which portion of a facility is located in a nonattainment area if a facility has several building units one of which may be located across a roadway from another.

Additional comments and responses regarding specific areas as well as the topic of contribution are summarized and addressed in further detail below.

Contribution Analysis— EPA failed to or inappropriately considered technical information

Comment: WDNR (0300) commented that EPA failed to consider, failed to acknowledge, or inappropriately considered the following:

Source apportionment modeling

Comment: Governor Walker (0310) commented that WDNR has data and modeling to show that the vast majority of emissions leading to nonattainment come from out-of-state. WDNR (0300) commented that LADCO source apportionment modeling results show that out-of-state emissions are responsible for the elevated ozone concentrations observed at Wisconsin's lakeshore monitors, including those in the 5-county Milwaukee area. For instance, only 7% of the ozone at Milwaukee's Bayside monitor originated from Wisconsin and much larger portions came from out-of-state (e.g., 26% from Illinois and roughly 20% from international sources denoted as "boundary conditions" or "BC"). WDNR commented that Chicago emissions dwarf those of the Wisconsin emissions, estimating that the Chicago area emits 79-81% of the NO_x and VOC emissions in the southwestern Lake Michigan area.

Commenters 0259, 0250, 0247, 0266, and 0309 cite the source apportionment modeling in the WDNR submittal which show the contribution from the entire state of Wisconsin to be approximately 12%, 15%, and 7% at the Harrington, Grafton, and Bayside monitors respectively. Commenters 0259, 0247,

[23] http://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Links/Ordinary-High-Water-Mark-and-Low-Water-Datum/

and 0266 believe that it takes 17,349 to 25,604 tpy of precursor emissions to make 1 ppb of ozone.[24] Commenter 0247 indicates this would translate to ozone concentrations of 0.49, 0.41, and 1.16 ppb on the high end of the range for Racine, Washington, and Waukesha county emissions, respectively. Commenter 0266 indicates that "assuming this relationship to be true, sources in Racine County would result in an increase of no more than 0.5 ppb ozone for any monitor in Wisconsin."

Response: The source apportionment modeling in WDNR's April 2017 submittal and comments does not support the argument that Wisconsin emissions are not meaningfully contributing to ozone nonattainment at violating monitors Wisconsin. On the contrary, each bar chart depicting source apportionment modeling results in the form of contributions from various states, etc., to each violating monitor in Wisconsin, shows contributions from Wisconsin. Contributions from Wisconsin are approximately 15%, 12%, and 7% at the Grafton, Harrington, and Bayside monitors, respectively. Fifteen percent, 12%, and 7% roughly convert to 10.5 ppb, 8.4 ppb, and 4.9 ppb of ozone if the overall ozone impact at the violating monitors were 70 ppb. These results indicate that while the contributions from Wisconsin are relatively low compared to contributions from other states,[25] these contributions are not negligible. This is consistent with EPA's analyses and conclusions, which did not rely on the use of this modeling, since this modeling was not clearly documented in WDNR's April 2017 TSD. It is also important to note that WDNR interprets "BC" or "boundary conditions" as contributions from outside the U.S., in reality, boundary conditions are a mix of international and natural sources as well as some recirculation from the U.S.

WDNR did not include in its April 2017 TSD, nor in its February 2018 comment letter/TSD, a detailed, transparent description of the source apportionment modeling. A complete and thorough description of any modeling analysis including details regarding the modeling platform, emissions inventory, model options, post-processing methodology, and model performance evaluation would be necessary to support the validity and technical credibility of any modeling analysis. These details were not provided. Even if these details were provided and the source apportionment modeling were determined to be valid, technically supported, high quality photochemical modeling, which it likely is since it came from the highly reputable Lake Michigan Air Directors Consortium,[26] the results of the source apportionment modeling show non-negligible contributions from Wisconsin to all violating monitors in Wisconsin, and, therefore, do not support Wisconsin's argument. Rather this modeling provides further evidence that Wisconsin emissions do, in fact, contribute to the violating monitors in Wisconsin despite large contributions from upwind areas like Chicago.

With respect to the commenters assertion that it takes 17,349 to 25,604 tpy of precursor emissions to form 1 ppb of ozone, firstly the commenters misquoted the document to which they were referring.[23] Secondly, ozone formation chemistry is complex and nonlinear. It varies based upon many factors, such as magnitude of precursor emissions, local meteorology, geographical features, etc. Any emissions of

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[24] *See* WDNR "Correspondence Memorandum, Ozone Air Quality Analysis for a PSD Permit for Aarrowcast – Shawano," Dated June 7, 2012: "…it is estimated that it takes from 17,349 tons per year to 25,604 tons per year of total VOC and NO_x reductions to result in a 1 ppb reduction in ozone concentration."

[25] For example, approximately 26% contribution from the state of Illinois for the Bayside monitor in Milwaukee County Wisconsin, which would convert to about 18.2 ppb if the overall impact at the monitor were 70 ppb.

[26] The Lake Michigan Air Directors Consortium (LADCO) http://www.ladco.org provides technical assessments for and assistance to its member states on problems of air quality. Informal communication with a LADCO modeler suggests the source apportionment modeling was done in general accordance with EPA's photochemical modeling guidance and contribution methodology.

NO_x and VOC have the potential to photochemically react to form ozone. Studies show that single sources of ozone precursor emissions can have measureable nearby downwind ozone impacts.[27,28] Maximum impacts typically occur within 50-100 km (31-62 miles) from the source and can occur up to 200 km (124 miles) away from the source. Actual sources[27] and hypothetical single sources[28] have been analyzed for their potential downwind ozone impacts. As a high-end example, a hypothetical source in northern Illinois emitting 500 tpy of NO_x can have a maximum 8-hour downwind ozone impact of 3.88 ppb.[29] As a lower end example, a hypothetical source in northwest Indiana emitting 500 tpy of NO_x can have a maximum 8-hour downwind ozone impact of 1.15 ppb.[30]

Sensitivity modeling scenarios

Comment: WDNR (0300) commented that EPA failed to acknowledge that WDNR submitted two sensitivity modeling scenarios showing emission reductions in Wisconsin would not meaningfully impact ozone design values along the lake and therefore local emissions have little to no impact on lakeshore ozone concentrations. One of these scenarios involved modeling a 10% reduction in both NO_x and VOC emissions from all sectors excluding on-road and biogenic emissions from a 10-county area in southeast Wisconsin. The other scenario involved "zero out" modeling of emissions from all sectors in Sheboygan County (excluding biogenic emissions). The modeling results showed that eliminating Sheboygan County emissions would not reduce the design values at the county's monitors and the emissions reductions in the 10 southeast Wisconsin lakeshore counties would not meaningfully impact ozone design values along the lake. WDNR indicated the modeling suggests that even Wisconsin's highest-emitting counties (Milwaukee and Waukesha) do not have a meaningful impact on lakeshore ozone concentrations, which is further evidence that emissions from these two counties are overwhelmed by those from the upwind regions, including the Chicago area, which emits six to seven times more NO_x and VOC.

Response: When modeling emissions reductions scenarios, it is appropriate to select one precursor at a time (either VOC or NO_x) in order to get a sense of how emissions reductions might impact ozone in the modeling domain. This can also provide a sense of whether the ozone in the area is more sensitive to changes in NO_x or changes in VOC and provide meaningful information about the potential impact of emissions reductions and, therefore, be useful for decision-making regarding control strategies. Wisconsin chose a 10-county 10% reduction in both NO_x and VOC excluding the on-road sector. The choices of emissions reductions seem arbitrary and have the appearance of "cherry-picking" scenarios to show little impact. The 10-county emissions reduction scenario could have included on-road sources and looked at reducing each precursor pollutant individually, not both in the same model run. Often times it is necessary to reduce emissions in the context of a modeling scenario by more than 10% to see

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[27] Baker, K. R. and Kelly, J. T.: Single source impacts estimated with photochemical model source sensitivity and apportionment approaches, Atmospheric Environment 96, 266-274, 2014.

[28] Baker, K. R., Kotchenruther, R. A., and Hudman, R. C.: Estimating ozone and secondary PM2.5 impacts from hypothetical single source emissions in the central and eastern United States, Atmospheric Pollution Research, 7, 122-133, 2016.

[29] EPA's Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program. Draft for Public Review and Comment. December 2, 2016.

[30] EPA's Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program. Draft for Public Review and Comment. December 2, 2016.

an impact anyway. It is unclear why only Sheboygan was chosen for the zero-out run. EPA's intended designation of Sheboygan is primarily based on the presence of a violating monitor. Further EPA's intended geographic extent of the nonattainment area for Sheboygan County is primarily based on the location of the attaining monitor in conjunction with WDNR's lake breeze inland penetration distance specifically with respect to these two monitors in Sheboygan County. Sheboygan County is not the county with the largest local emissions sources. The zero-out run could be conducted for the 10-county area and include on-road mobile sources. If there were still only small impacts in a 10-county zero-out simulation, then Wisconsin's argument that in-state emissions do not impact the violating monitors might be convincing. Emissions sensitivity results (~0.1 ppb response) seem at odds with the source apportionment modeling results which show contributions of 7-15% from Wisconsin. Perhaps this is due to the choice of emissions reductions scenarios. If not, Wisconsin should explore the discrepancy more. At any rate, the results of these two sensitivity scenarios are not useful in terms of supporting Wisconsin's request for attainment for the entire state or, barring that, narrow parcels of nonattainment areas near the Lake Michigan shoreline around the violating monitors.

Wind rose data analysis and HYSPLIT back trajectories

Comment: WDNR (0300) comments that EPA did not include or reference WDNR's wind rose analyses, which more accurately reflect the complex lakeshore environment than does the HYSPLIT back trajectory model relied upon by EPA, and which confirms that ozone concentrations exceeding 70 ppb occur when winds originate offshore. EPA inappropriately relied on HYSPLIT back trajectories to make a connection between local emissions and locally-monitored ozone levels. WDNR believes that only the 100 m HYSPLIT back trajectories are potentially relevant when considering associations with ground-level monitored ozone levels. Most traveled over the lake (high lever represent synoptic and not local flow). In contrast, direct measurements at these monitors found that, for virtually every single hour with ozone concentrations above 70 ppb, the air masses came from over the lake: from 155-185 degrees for the Harrington Beach monitor and 135-175 degrees for the Grafton monitor. The wind roses from the other lakeshore monitors showed similar results: ozone-rich air was delivered to the monitors almost exclusively from over Lake Michigan. This comparison conclusively shows that HYSPLIT underestimates the role of the lake in delivering ozone-rich air to this monitor and overestimates the impact of emissions from inland portions of the counties under discussion.

Commenters 0274, 0259, 0250, 0308, 0244, 0247 believe there is no meaningful contribution from Racine, Washington, and Waukesha counties. Commenters 0259, 0244, 0247 cite the wind roses in WDNR's April, 2017, submittal, specifically the ones from the Harrington Beach and Grafton monitoring sites which show winds from the south southeast during days in 2014-2016 with 1-hour ozone values greater than 70 ppb. Commenters 0259, 0244, 0247 also cite an April 17, 2016, HYSPLIT 48-hour back trajectory from the Bayside monitor in WDNR's submittal, showing air parcels traveling from the southeast and over the lake. Commenters 0259, 0250, and 0247 believe that the EPA HYSPLIT back trajectories support excluding Wisconsin counties since the lowest altitude trajectories are from over the lake. Specifically, commenter 0266 believes meteorological data do not support the finding that Racine County emissions contribute (e.g. low level trajectories are mainly coming from over the lake and even on days that surface or mid to upper level air masses cross over Racine County, these air masses have crossed over the greater Chicago area with its significantly greater contribution of ozone precursors prior to crossing over Racine County. Commenter seems to believe the location of where the back trajectories originate is indicative of where the emissions are coming from.) Commenter 0266

thinks that exceedances have only occurred on days and times when wind is carrying ozone from over Lake Michigan (and that EPA ignored this fact in its TSD). Commenter 0266 also indicates that the Racine County population has declined and less than one quarter of Racine County residents commute to or through Milwaukee or Ozaukee counties, so the population and activity data indicate minimal contribution. Commenter 0247 believes that the Milwaukee area monitors have never exceeded a standard when monitoring air coming from these counties, rather, the monitors are measuring ozone produced from precursor emissions generated elsewhere.

Response: Wisconsin's wind roses show that the wind direction for most of the near lakeshore monitors during the 2013-2016 hours of high ozone (>70 ppb) was predominately from the southeast quadrant, except as follows. For the two Sheboygan sites, the predominate wind direction was from directly south or slightly south southwest (e.g. from the direction of the Milwaukee area). For the Milwaukee Health Center site, the wind direction was often from the south southeast, but also often from the southwest. For the Door County (Newport) site, the wind direction was often from the southwest/south southwest. Wisconsin seems to use the wind roses to conclude that since the hours of high ozone typically occur when the local wind direction at the monitors is generally (but not at all times) coming from over the lake, that the ozone is coming from precursor emissions originating out-of-state. As explained previously, precursor emissions from Wisconsin (e.g. from the high emitting Milwaukee/Waukesha urban area) can flow out over the lake with the morning land breeze, combine with out-of-state emissions, form ozone during the day, and flow back on shore with the afternoon/evening lake breeze. In other words, that the wind roses show the wind direction was often times predominately from over the lake during afternoon/evening hours of high hourly ozone detected at the monitors, does not necessarily mean the precursor emissions originated from out-of-state. Wisconsin's wind rose data represents the hours of the day when ozone was above the standard. Ozone is typically highest in the afternoon. This is also the time of day that the localized lake breeze typically occurs. Therefore, it is not surprising that monitor-site specific wind direction data show this. However, it is important to note that the lake breeze does not occur every day.

Hourly afternoon exceedance day wind rose data cannot be relied upon to provide evidence about where ozone precursor emissions originate. EPA's monitor-specific exceedance day 24-hour HYSPLIT back trajectories provide evidence about the general locations of precursor emission sources, whereas Wisconsin's wind direction data essentially only indicates the local wind direction during times of high hourly ozone. Since the HYSPLIT back trajectories represent the past 24 hours from midnight on exceedance days, and ozone takes time to form, the 24-hour HYSPLIT back trajectories represent a sufficient temporal and spatial scale from which to glean evidence not only of the direction from which the ozone air mass came but also evidence pertaining to the general locations of the precursor emissions sources.

Wind roses that depict wind speed and direction reported in surface observations can be used to estimate wind speed and frequency for the immediate area of the observation, in this case the ozone monitor site, but that representativeness diminishes with distance from the site. Extrapolating the wind pattern depicted in a wind rose to a larger area affords a great deal of influence to the wind measured at that one site, ten meters above the ground, and to any small-scale geographic influences that may affect wind at that site. The HYSPLIT trajectories used in EPA's analyses are determined by the Eta Data Assimilation System (EDAS) an archive of meteorological parameters across a nationwide grid at many vertical levels, and incorporating surface and upper-air observations as well as wind profiler, radar, and

aircraft data. Unlike wind roses, HYSPLIT backward trajectories are just as representative of atmospheric conditions at a distance from the trajectory starting point as they are at the starting point. HYSPLIT trajectories based upon EDAS more accurately reflect the pertinent meteorological influences in the area under examination than does a wind rose based upon single-point observations.

EPA produces HYSPLIT back trajectories at starting heights 100, 500, and 1000 meters above ground level. These heights represent levels typically within the atmosphere's mixed layer at the monitor, yet above the influence of local terrain. Trajectories at these three starting heights are relevant in assessing transport of air parcels for potential contribution to ozone concentrations at the trajectory starting point. For the locations in this comment, trajectories at all three heights transited areas in the EPA recommendations. With respect to the comments regarding the lower level (100 m) trajectories, it is important to note that the lower level (100 m) trajectories do not exclusively occur over the lake.

Local NO_x and VOC emissions

Comment: WDNR (0300) comments that despite many lines of credible evidence provided by DNR showing that local emissions have little to no impact on areas of Wisconsin where ozone levels exceed 70 ppb, EPA's intended nonattainment areas appear designed to include as many local sources of these emissions as possible. WDNR comments that local precursor emissions do not meaningfully impact the ozone levels at the violating monitors, and therefore EPA should not consider in-state emissions contributions. WDNR also comments that in-state emissions reductions would not meaningfully impact the ozone levels at the violating monitors. For example, WDNR indicates that NO_x and VOCs from the 5-county Milwaukee area decreased by 25% and 33%, respectively, from 2008 to 2014, however, ozone design values in the Milwaukee area remained relatively flat during this period. With respect to Manitowoc County, WDNR believes that EPA should not consider emissions sources located in the county since WDNR believes emissions are low and ozone-rich air reaches the Manitowoc County monitor exclusively from over Lake Michigan (as discussed in the wind rose section above). WDNR indicates that Manitowoc County emissions are similar in magnitude to those of Ozaukee County and Door County, which, with respect to Door County, EPA concluded "do not significantly contribute to ozone concentrations in the area itself or to other areas."

Response: Any emissions of NO_x and VOC have the potential to photochemically react to form ozone. Studies show that single sources of ozone precursor emissions can have measureable nearby downwind ozone impacts.[31,32] Maximum impacts typically occur within 50-100 km (31-62 miles) from the source and can occur up to 200 km (124 miles) away from the source. Actual sources[31] and hypothetical single sources[32] have been analyzed for their potential downwind ozone impacts. As a high-end example, a hypothetical source in northern Illinois emitting 500 tpy of NO_x can have a maximum 8-hour downwind ozone impact of 3.88 ppb.[33] As a lower end example, a hypothetical source in northwest Indiana

[31] Baker, K. R. and Kelly, J. T.: Single source impacts estimated with photochemical model source sensitivity and apportionment approaches, Atmospheric Environment 96, 266-274, 2014.
[32] Baker, K. R., Kotchenruther, R. A., and Hudman, R. C.: Estimating ozone and secondary PM2.5 impacts from hypothetical single source emissions in the central and eastern United States, Atmospheric Pollution Research, 7, 122-133, 2016.
[33] EPA's Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program. Draft for Public Review and Comment. December 2, 2016.

emitting 500 tpy of NO_x can have a maximum 8-hour downwind ozone impact of 1.15 ppb.[34] Therefore, it is important to capture as many nearby sources of potentially contributing precursor emissions as is reasonable based on the evidence resulting from EPA's 5-factor analyses. Regarding the comment about the magnitude of Door County emissions with respect to other individual counties, EPA's initial analysis for the full county justified reducing the extent of the nonattainment area to only the northern portion of Door County. The emissions from this portion of the county can reasonably be estimated at about two thirds (2/3) that of the full county emissions which comes out to approximately 2,439 tpy NO_x and 1,626 tpy VOC. While these amounts of precursor emissions have the potential to form a meaningful concentration of ozone, EPA carefully considered Wisconsin's request to classify this area as a Rural Transport Area (RTA). In order to qualify as an RTA, the Administrator must find that the sources of VOC and NO_x emissions within the area do not make a significant contribution to the ozone concentrations measured in the area or in other areas.[35] Given that Door County is the last (northernmost) county in the series of eastern Wisconsin counties receiving transport from upwind high-emitting urban areas like Green Bay, Milwaukee, and Chicago, EPA was able to comfortably use our discretion to classify this area as an RTA. A similar analysis and determination is not appropriate for the other areas that the commenter (0300) mentions, specifically Ozaukee County, which is part of the Milwaukee CSA or Sheboygan and Manitowoc counties which, while they are each their own area, are immediately downwind of the Milwaukee area and each are adjacent to a metropolitan statistical area (CSA/CBSA), which disqualifies them as potential RTAs, whereas the northern portion of Door County is not adjacent to a CSA/CBSA.

To reiterate, the fact that an area is affected by lake breeze meteorology does not mean that the precursor emissions are coming exclusively from out-of-state and/or over the lake. It means the meteorology has the potential to 1) transport precursor emissions (from in-state, as well as out-of-state, and any emissions that are coming from other sources in the area e.g. aircraft flying low, ships on the lake, etc.) over the lake 2) trap the precursor emissions in a shallow layer of air above the surface of the lake water, and 3) once the precursor emissions have reacted to form ozone, then transport the reaction product (ozone) back onto the shore.

With respect to the comment regarding NO_x and VOCs from the 5-county Milwaukee area decreasing from 2008 to 2014, and ozone design values remaining relatively flat, a variety of factors are involved in ozone formation including magnitude of precursor emissions, NO_x-sensitive versus VOC-sensitive chemical environments, meteorology, photolysis rates, etc. Therefore, it is not surprising that ozone design values fluctuate from year to year and hover around a general value despite precursor emissions reductions, particularly if both NO_x and VOC emissions have been reduced (by comparable percentages) over time. Reductions in both NO_x and VOC (as opposed to one or the other strategically chosen based on chemical environment i.e. NO_x-sensitivity or VOC-sensitivity) have the potential to result in ozone not being meaningfully reduced. Although, it is important to note that ozone design values in Wisconsin have generally decreased over time when looking at a longer period of time than just 2008-2014.

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[34] EPA's Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program. Draft for Public Review and Comment. December 2, 2016.

[35] Clean Air Act Section 182(h).

Business operations (existing and new)

Comment: Commenters 0266, 0308, 0259, 0247, 0250, 0244, 0274, 0285, and 0308 alluded to or expressed concerns about economic growth and business operations. In particular, commenter 0266 is concerned about possible implications of nonattainment such as WDNR developing a SIP mandating emissions reductions from existing sources and emissions offsets for the permitting of new sources, with specific emphasis on an electronics manufacturing district planned for construction in Racine County. Commenter 0310 indicated that EPA's potential nonattainment designations impose a heavy regulatory load on businesses and industry and threaten the well-being of the state's economy. Commenter 0285 is concerned about a negative connotation associated with and difficulty attracting new businesses and residents to nonattainment areas.

Response: Under section 107(d) of the CAA, EPA is required to designate as nonattainment an area that is violating a new or revised national ambient air quality standard or that contributes to a nearby violation. EPA determines an ozone violation based on certified quality assured monitoring data. Ozone is a regional pollutant and is readily transported both short and long distances. To determine whether a nearby area is contributing to a violation, EPA recommended that states conduct a technical analysis based on a number of factors listed in the designation guidance for the 2015 ozone NAAQS, including air quality data, emissions and emissions-related data, meteorological data, and geography/topography, and jurisdictional boundaries. In evaluating whether to modify a state's designation recommendation, EPA also considered those factors. The justification for including Wisconsin counties (whole or partial) in a nonattainment area is provided in EPA's technical support document for each area. In determining whether an area should be designated nonattainment, EPA did not consider economic impacts because that is not relevant for determining whether an included area is violating the NAAQS or is a nearby area that is contributing to a violation as provided under CAA section 107(d).

The implementation rulemaking for the 2015 ozone NAAQS will address the control obligations for areas designated nonattainment. As EPA considers the required elements of implementation for the 2015 ozone NAAQS, it is our goal to propose approaches that provide flexibility and opportunity for efficiency to the extent such approaches are consistent with the CAA and will not jeopardize expeditious attainment of the public health and welfare goals of the CAA. In addition, we are exploring ways in which the EPA could provide assistance to the states. Finally, to the extent the CAA does not mandate specific control measures, states may consider economic concerns in development of their state implementation plans to address air quality.

II. Milwaukee Area Comments

Comment: While the bulk of the WDNR (0300) comments are summarized and addressed above, WDNR (0300) specifically commented as follows with respect to individual counties in the Milwaukee area. Based on its distance from the shoreline power fit, WDNR believes that only a narrow strip of Milwaukee, Ozaukee, and Racine counties are likely to experience nonattainment air. WDNR believes Washington County should be attainment since emissions are low, there is no ozone monitor, and if there were an ozone monitor in Washington County, it would be clean. WDNR believes the designation of Waukesha and Milwaukee counties should be based on air quality data alone, since emissions are relatively small compared to Chicago-area emissions, the Waukesha County monitor is clean, and aside from the violating monitor in the northern portion of Milwaukee County, the two monitors, located within two miles of the shoreline in central Milwaukee County, are clean. WDNR believes the geographic

extent of nonattainment air in Racine County is 4.2 miles inland and consistent with that of Kenosha County, emissions are similarly low, and due to Racine County's location, ozone is likely dominated by transport over Lake Michigan. WDNR believes EPA's 100 m HYSPLIT analysis and WDNR's wind rose analysis both suggest a dominant role for over-lake transport to the Ozaukee County monitors. Emissions from Ozaukee County sources are minimal and of a similar magnitude as those from Door County, which EPA concluded "do not significantly contribute to ozone concentrations in the area itself or to other areas." Ozaukee County is located just south of Sheboygan County and is impacted by the same lake breeze effects described by both WDNR and EPA for Sheboygan County. EPA should therefore consider this information similarly in Ozaukee County.

With respect to the Milwaukee area overall, WDNR conducted a more detailed examination of sub-county level emissions and emissions-related data (i.e., population density) showing that many parts of Milwaukee and Waukesha counties do not contain meaningful emissions sources that could contribute to nonattainment and most parts of the 5-county area do not have meaningful on-road emissions, indicating that commuters are not responsible for meaningful NO_x or VOC emissions. WDNR requests that if EPA considers local NO_x and VOC emissions, it consider these emissions at the sub-county level. WDNR notes that EPA is considering partial county designations of Grundy and Kendall counties in Illinois under circumstances that compare favorably to Milwaukee area. Despite being part of the Chicago IL-IN-WI CSA, only the parts of Grundy and Kendall counties most contiguous to the urban area of the CSA are proposed by EPA to be designated nonattainment of the 2015 ozone NAAQS; EPA explains that this is due to their low emissions relative to other areas. Without explanation, EPA failed to consider this approach in the Milwaukee area.

Response: As explained in previous responses, Wisconsin's best-fit line (70 ppb contour) alone is not a valid tool for delineating nonattainment areas. It is inappropriate to analyze Ozaukee County in a similar fashion to that of Door County, since Ozaukee County is not a single county area, nor is it a candidate for classification as an RTA. Ozaukee County is part of the Milwaukee CSA. The Milwaukee area, like all of the eastern Wisconsin shoreline, is subject to lake breeze meteorology (as mentioned in EPA's 120-day TSD); however, this is not the only factor contributing to ozone production and transport in the Milwaukee area and the impact of lake breeze meteorology is not sufficient justification to support Wisconsin's idea that ozone coming from over the lake is formed almost exclusively by out-of-state precursor emissions. Each of the five Milwaukee area counties have low precursor emissions relative to the entire Chicago area precursor emissions. However, the precursor emissions from each of the five Milwaukee intended area counties are substantial enough to contribute to the nearby violating ozone monitors. For instance, the Milwaukee area county emissions are listed below in Table 1 and for reference in Table 2 is a list of the emissions from other contributing counties without violating monitors which are included in other intended nonattainment areas in other parts of the region.

Table 1: Milwaukee Area emissions by county

Milwaukee Area	**NO_x (tpy)**	**VOC (tpy)**
Milwaukee (violating & contributing)	22,012	17,016
Waukesha (contributing)	9,685	10,526
Racine (contributing)	4,153	4,296
Washington (contributing)	3,543	3,625
Ozaukee (violating & contributing)	3,107	2,003

Table 2: Contributing Emissions by County of other Intended Nonattainment Areas in the Region

Contributing counties without violating monitors	NO_x (tpy)	VOC (tpy)
Delaware OH (Columbus)	4,908	4,838
Fairfield OH (Columbus)	4,360	3,741
Licking OH (Columbus)	4,285	4,733
Clark, IN (Louisville)	4,157	4,253
Medina OH (Cleveland)	3,750	4,646
Floyd, IN (Louisville)	3,686	2,572
Monroe IL (St. Louis)	2,682	1,171

With respect to the comment regarding the partial counties of Kendall and Grundy included in the Chicago nonattainment area, this would be analogous to going back and grabbing additional emissions sources in the collar counties of the Milwaukee CSA, for example there is a large point source in the southeast corner of Jefferson County. There is also a large point source in Dodge County near the border of Washington County (verify this source is still operating since this is unclear from the mapping tool and a WDNR permit search). In its 120-day TSD for the Milwaukee area, EPA eliminated Dodge, Jefferson, and Walworth counties from the initial area of analysis due to the results of our 5-factor analysis.

Comment: In addition to WDNR (0300), several parties commented specifically on the Milwaukee intended nonattainment area. Some of their comments are addressed in the responses above and other comments are addressed below. These commenters include the Waukesha County Executive (0274), the Waukesha County Business Alliance (0259), the Wisconsin Institute for Law and Liberty, Inc. (0250), the Mayor of the City of Waukesha (0308), the Wisconsin Electric Power Company (0244), Wisconsin Manufacturers & Commerce et al. (0247), and the Racine Area Manufacturers and Commerce (RAMAC), and Duey Stroebel, the Wisconsin State Senator for the 20th District (0309). These commenters generally want EPA to designate Wisconsin as attainment or reduce the size of the intended nonattainment area(s). It should be noted that Commenter 0309 represents portions of Ozaukee, Washington, Sheboygan, Fond du Lac, and Calumet counties. Commenters 0259, 0250, and 0247 do not want Waukesha, Washington, and Racine County and Commenter 0308 does not want the City of Waukesha to be included in the nonattainment area. Commenters 0259, 0250, 0244, and 0247 and 0309 believe if there is a nonattainment boundary, it should be very similar to the narrow strips of land from the shoreline inland encompassing the violating monitors per the technical analysis document submitted to EPA by WDNR on April 7, 2017. Commenter 0266 specifically requests that EPA reconsider Racine County's intended designation status or, in the alternative, reduce the geographic boundary of the proposed nonattainment zone. These commenters provided the following supporting information, which EPA addresses below along with WDNR's additional comments that were specific to the Milwaukee area:

Clean Data

Comment: WDNR (0300) commented that EPA inappropriately included counties with attaining monitors (e.g. Waukesha County) as part of intended nonattainment areas. Commenters 0274, 0259,

0250, 0244, 0247, and 0266, and 0309 each indicated that one or more of the following counties do not have violating monitors: Washington, Waukesha, and Racine.

Response: Waukesha, Washington, and Racine counties were not included in EPA's intended Milwaukee nonattainment area based on monitoring data. These counties, like other counties with attaining monitors (in other nonattainment areas) across the country, were included based on a contribution analysis as described in EPA's 2015 intended ozone designations for Wisconsin TSD. EPA determines nonattainment areas based on violating monitors and nearby areas that may be contributing based on a 5-factor "weight of evidence" analysis. EPA's TSD goes into detail on the contribution analysis, which is why Waukesha, Washington, and Racine counties are included in the intended nonattainment area. While the monitoring data from Racine County was not considered in EPA's analysis due to the lack of a 2014-2016 design value, it is worth noting that the 2015 4th high is 68 and the 2016 4th high is 76. The preliminary 2017 4th high is 80, which results in a preliminary 2017 DV of 74 ppb (with truncation).[36] Due to a dilapidated building presenting unsafe working conditions, EPA allowed WDNR in 2013 to shut down and move the Racine County monitor to a new location approximately 5 miles north of its original location where a monitor had been located since 1977. WDNR was unable to get the monitor up and running at its new location prior to the start of the 2014 ozone season causing the gap in continuous ozone data for Racine County.

Area of analysis

Comment: To commenter 0244, it appears EPA proposed to include the 5-county area because EPA considered the 5 counties collectively to be one statistical area. Commenter points to EPA designations guidance explaining that EPA methodology typically starts with a CSA or CBSA but that each area is analyzed on a case-by-case basis and asks that EPA use its discretion to designate a smaller area for the Milwaukee nonattainment area based on supporting info (see other comments and responses with respect to the supporting info from this commenter).

Response: As per our long-standing practice, EPA typically starts with the larger of the CSA or the CBSA as the area of analysis for ozone nonattainment area designations.[37] The Milwaukee CSA is an 8-county area. As a result of EPA's 5-factor analysis three of the eight counties were excluded due to relatively low contribution. The remaining five counties in EPA's indented Milwaukee nonattainment area are included due to violating monitors and/or contributions. There is no compelling technical support (see other comments and responses) for reducing the spatial extent of the Milwaukee intended nonattainment area to the narrow strips of land around the violating monitors as suggested in WDNR's April 2017 TSD.

Milwaukee area experiences lake breeze meteorology

Comment: Commenters 0244 and 0247 note that the Milwaukee area experiences lake breeze meteorology just like Sheboygan and Manitowoc counties and commenter 0244 does not think that EPA addressed the lake breeze meteorology with respect to the Milwaukee area. Commenter 0309 indicates, "It is WDNR's opinion that because pollutants travel exclusively on coastal breezes and are detected by

[36] The specific methodology for calculating the ozone design values, including computational formulas and data completeness requirements, is described in 40 CFR part 50, appendix U.

[37] https://www.epa.gov/ozone-designations/epa-guidance-area-designations-2015-ozone-naaqs

monitors in close proximity to the coastline, it is unfair to use data from these monitors as justification for county-wide non-attainment designations. This is an assessment shared by the EPA regarding the Sheboygan County coastal air monitor. Because the EPA has already demonstrated agreement with this justification for Sheboygan County, it should apply that same determination to Ozaukee County air monitors."

Response: That the Milwaukee area experiences lake breeze meteorology was addressed in EPA's 120-day analysis. Milwaukee is part of an 8-county urban area with precursor emissions much greater than each of the single-county areas of Sheboygan and Manitowoc. EPA's 5-factor contribution analysis, which included consideration of lake breeze meteorology and local precursor emissions, started with the 8-county Milwaukee CSA, eliminated 3 counties due to relatively low contribution, and resulted in a 5-county area with 2 counties experiencing violations and a determination of all 5 counties contributing to those violations. That this area experiences lake breeze meteorology is not mutually exclusive with the determination that this area also contributes to its own ozone violations. Sheboygan and Manitowoc are separate areas. For each area (Sheboygan and Manitowoc), the initial area of analysis was the full county. For each, the 5-factor contribution analysis, which included consideration of lake breeze meteorology and local precursor emissions resulted in partial county areas that captured the majority of the potentially contributing precursor emissions sources. It is important to note that the only reason EPA was able to justify honoring Wisconsin's request to reduce the size of the Sheboygan County area from a full county to a partial county area is the existence of the second ozone monitor in Sheboygan county which is attaining the standard coupled with WDNR's lake breeze inland penetration distance analysis specific to the two Sheboygan County monitors. EPA liberally extended that reasoning to Manitowoc County (despite Manitowoc not having an inland attaining monitor), since Manitowoc County is adjacent to and immediately north of Sheboygan County.

International contribution

Comment: Commenters 0259, 0250, 0308, 0247 indicate that the LADCO source apportionment modeling in the WDNR submittal shows approximately 20% contribution from international transport and commenter 0247 indicates that photochemical modeling from the Midwest Ozone Group shows this as well. Commenters 0259 and 0250 make the following statements: "Notwithstanding any other provision of law, any State that establishes to the satisfaction of the Administrator that, with respect to an ozone nonattainment area in such State, such State would have attained the national ambient air quality standard for ozone by the applicable attainment date, but for emissions emanating from outside of the United States, shall not be subject to the provisions of section 7511(a)(2) or (5) of this title or section 7511d of this title [of the CAA, and] since Wisconsin has shown, clearly, that more than 20% of the ozone concentration at violating monitors is from sources outside of the United States, our state qualifies for this relief. As a result, U.S. EPA should make clear that those provisions of the Clean Air Act will not apply to the proposed nonattainment zones in any final action on this matter." Commenter 0247 believes EPA should find that Wisconsin qualifies for the exemptions set forth in Section 179b of the CAA related to areas impacted by international emissions.

Response: Firstly, it should be noted that the commenters seem to be interpreting "BC" or "boundary conditions" as contributions from outside the U.S., in reality, boundary conditions are a mix of international and natural sources as well as some recirculation from the U.S. However, as several commenters identify, the language in section 179B(b) of the CAA may provide regulatory relief "...with

respect to an ozone nonattainment area…" if the affected state can establish "to the satisfaction of the Administrator" that the subject area "would have attained the [NAAQS] but for emissions emanating from outside of the United States…." While CAA section 179B recognizes the possibility that certain nonattainment areas may be impacted by ozone or ozone precursor emissions from international anthropogenic sources beyond the regulatory jurisdiction of the state, section 179B applies to designated *nonattainment* areas and does not provide the authority to exclude monitoring data influenced by international transport from regulatory determinations related to attainment/nonattainment, including area designations for new NAAQS. Similarly, section 179B does not provide the authority to classify an area with a lower classification than indicated by actual air quality or relax any mandatory control measures associated with the area's classification. For designated nonattainment areas, an approved "but for" analysis prepared under section 179B(a) as part of an attainment plan/demonstration provides relief from attainment plan disapproval and any accompanying sanctions or Federal Implementation Plan. An approved "but for" analysis prepared under section 179B(b)-(d), as part of an attainment determination, provides relief from a finding of failure to attain and reclassification (e.g., relief could come in the form of certain fee provisions (section 185) or relief from bump-ups).[38]

The EPA notes that while Wisconsin, and other similarly situated states, may not seek relief under section 179B prior to designations for the 2015 ozone NAAQS, they may qualify for relief under the exceptional events provisions in section 319 of the CAA and the implementing regulations (i.e., the Exceptional Events Rule) codified at 40 CFR 50.1, 50.14 and 51.930. The CAA recognizes that when "exceptional" events cause exceedances or violations of the NAAQS that subsequently affect certain regulatory decisions, including area designations, the normal planning and regulatory process established by the CAA may not be appropriate. The Exceptional Events Rule provides a mechanism by which an air agency can request the exclusion of event-influenced air quality data. Once EPA determines that an event is "exceptional" under CAA section 319, it will exclude the data directly influenced by that event and base its subsequent regulatory determination on the remaining monitoring data. Transported emissions (or naturally-occurring ozone, in the case of stratospheric intrusions) from natural sources such as wildfires or stratospheric ozone intrusion could qualify for data exclusion under the Exceptional Events Rule.

The EPA encourages affected air agencies to coordinate with their EPA Regional office to identify approaches to evaluate the potential impacts of international transport and to determine the most appropriate information and analytical methods for each area's unique situation. The EPA will also work with states that are developing attainment plans for which section 179B is relevant, and ensure the states have the benefit of the EPA's understanding of international transport of ozone and ozone precursors. To assist in this effort, EPA is currently developing or has developed the following implementation tools to help states assess the potential contributors to transported ozone: ozone/wildfire exceptional events implementation guidance,[39] stratospheric ozone intrusion exceptional

[38] The regulatory relief associated with attainment plans and demonstrations and provided in CAA section 179B(a) applies to all NAAQS pollutants. Sections 179B(b)-(d) contain essentially the same regulatory relief provisions related to attainment determinations, but the sections apply to different pollutants with 179B(b) applying to ozone, 179B(c) applying to carbon monoxide and 179B(d) applying to particulate matter.

[39] Currently available at https://www.epa.gov/air-quality-analysis/exceptional-events-rule-and-guidance

events implementation guidance,[40] and technical guidance on preparing approvable demonstrations under CAA section 179B.[41]

Dis-benefit

Comment: Commenter 0308 indicates that Racine, Waukesha, and Washington County emissions are decreasing ozone formation at the Ozaukee County monitors and commenter 0247 is concerned that EPA has not accounted for the "dis-benefit" of controlling NO_x in these three counties.

Response: No evidence was submitted to support the idea that precursor emissions from Racine, Waukesha, and Washington County are responsible for reducing ozone concentrations detected at the Ozaukee County monitors. Perhaps the commenters are referring to NO_x scavenging? High NO_x concentrations found in downtown metropolitan areas, especially near busy streets and roads, and in power plant plumes, can result in scavenging (sometimes referred to as titration) of ozone by reaction with NO to form NO_2 leading to localized depletion of ozone. However, as urban plumes are transported and diluted, this NO_2 can lead to photochemical production of ozone downwind of the source areas. Perhaps the commenters are referring to NO_x-sensitivity versus VOC-sensitivity with respect to ozone formation? After a portion of a state is designated as nonattainment, the state is responsible for attainment planning requirements including reductions in precursor emissions. The state has some discretion when meeting the CAA requirements with respect to focusing control efforts on the precursor emissions that will be most effective in reducing ozone concentrations. The state may investigate whether an area is NO_x-sensitive, VOC-sensitive, or transitional, and focus precursor emissions reductions efforts accordingly.

Exceptional Events

Comment: Commenter 247 thinks specific days from 2016 with high ozone should be excluded from the Wisconsin monitoring data due to impacts from Canadian wildfires and references EPA Exceptional Event request packages put together by the state of New Jersey and the state of Maryland containing evidence that Wisconsin air quality was impacted by these wildfires.

Response: The CAA and EPA implementing regulations, specifically the Exceptional Events Rule codified at 40 CFR 50.1, 50.14 and 51.930, allow for the exclusion of air quality monitoring data when making certain regulatory determinations (including attainment/nonattainment decisions for new NAAQS) when there are exceedances caused by certain event-related influences, including wildfires. To exclude event-influenced data under the Exceptional Events Rule, the affected air agency must prepare a demonstration that meets the technical criteria and the schedule and procedural requirements in the rule. Specifically, under the Exceptional Events Rule, a demonstration must contain the following five elements: a narrative conceptual model, evidence of a clear causal relationship between the specific event and the monitored exceedance or violation (supported in part by a comparison to historical concentrations), evidence that the event was not reasonably controllable or preventable, evidence that the event was due to human activity that is unlikely to recur at a particular location or was a natural event and documentation that the air agency conducted a public comment process and addressed comments received, as necessary. While multiple air agencies and states affected by the same event can

[40] under development
[41] under development

share the analyses and/or narrative to support some of these required elements, other analyses and procedural steps (e.g., the causal relationship between the event and the affected monitor and the authorizing official) will likely be different for each air agency. Simply referencing another air agency's demonstration for a claimed shared event does not meet the requirements of the Exceptional Events Rule. Further, Wisconsin did not submit any requests for data exclusion under the Exceptional Events Rule related to initial area designation decisions for the 2015 ozone NAAQS.

EPA 2023 modeling predicts attainment with existing control measures

Comment: Commenters 0259, 0250, 0244, 0247 indicate that EPA photochemical modeling predicts that all Wisconsin monitors will remain in or reach attainment of the 2015 ozone NAAQS by 2023 and suggest that this supports reducing the size of the intended Milwaukee nonattainment area. Commenter 247 specifically notes that this photochemical modeling prediction is based on "on the books" controls (without any 2015 ozone NAAQS implementation regulations) and therefore does not include additional emissions reductions from Racine, Waukesha, or Washington counties.

Response: EPA does not base NAAQS designations on future air quality estimates. Also, it should be noted that not all Wisconsin monitors are projected to attain the 2015 ozone NAAQS by 2023 (see EPA's March 27, 2018, transport memo).[42]

Concerns about state resources for nonattainment planning

Comment: With respect to WDNR resources, Commenter 0244 expressed concern that a Milwaukee area nonattainment designation would result in resources being allocated to administrative burdens at the expense of limiting resources dedicated to scientific research designed to find solutions to ozone pollution (e.g. participation in the Lake Michigan Ozone Study).

Response: The Lake Michigan Ozone Study of 2017 involved on the order of $1.3 million in funding from various organizations including the National Aeronautics and Space Administration (NASA) (~46%), the National Science Foundation (NSF) and university research groups (~26%), the National Oceanic and Atmospheric Administration (NOAA) (~9%), the Electric Power Research Institute (EPRI) (~8%), the Environmental Protection Agency (~7%) and WDNR/LADCO (~4%). While States can receive up to 40% of their air pollution control program funding from an EPA grant, the states determine how to best allocate the federal and state resources available to meet federal requirements and protect human health and the environment. Nonattainment area planning and scientific research designed to investigate solutions to ozone pollution go hand in hand.

Racine County has similar emissions and emissions-related data as individual partial county areas

Comment: Commenter 0266 thinks that Racine County is similar to Sheboygan, Manitowoc, and Kenosha counties with respect to emissions, population density, VMT, etc. and should be treated similarly.

Response: Racine County is part of the Milwaukee CSA and therefore not a single county initial area of analysis like Sheboygan and Manitowoc. Racine County is upwind of the violating monitors in the

[42] https://www.epa.gov/airmarkets/march-2018-memo-and-supplemental-information-regarding-interstate-transport-sips-2015

Milwaukee area of analysis, whereas Kenosha County is the downwind-most county of the Chicago area of analysis and contains two violating monitors. See other comments and responses above for information on and why EPA was able to propose partial county nonattainment areas for Sheboygan and Manitowoc.

Concerned citizen comment with respect to the Milwaukee area

Comment: Commenter 0311 resides in Milwaukee and is affected by ozone pollution, which has a direct effect on the commenter's physical well-being and longevity. Commenter 0311 is also affected by the imposition of ozone pollution regulations by being subject to motor vehicle emissions testing. Commenter 0311 cites a news article referring to Wisconsin's request to set aside a recent federal finding that southeast Wisconsin is violating new and tougher emissions standards for smog and conclude the state is complying with the law. Short of that, the state is recommending federal officials carve out narrow strips of land of a few miles along the Lake Michigan shoreline as violating the new standard for ozone pollution and declare the rest of the state in compliance. Commenter 0311 believes that this request to weaken air pollution regulations in southeast Wisconsin should be denied. The commenter believes the citizenry of Wisconsin has paid too much of a price to attract a foreign manufacturing corporation, Foxconn, to locate in southeast Wisconsin. The commenter believes that no matter how much Wisconsin elected officials want this corporation to do business in Wisconsin, this corporation must be required to do business in the same manner as all other Wisconsin and U.S. businesses, which means its operations cannot be exempted from engaging in environmentally destructive activities. The commenter is asking EPA to enforce the standards already in place and to do no more than what EPA is tasked to do and is already doing.

Response: The commenter seems to be referring to Wisconsin's recommendation that EPA foremost designate the entire state as attainment of the 2015 ozone NAAQS or, barring that, only narrow parcels of nonattainment land encompassing the violating monitors near the shoreline of Lake Michigan. The commenter also seems to be referring to EPA's intent, outlined in our 120-day TSD, to designate the 5-county Milwaukee area as nonattainment of the 2015 ozone NAAQS based on our analysis of violating monitors and nearby contributing areas. EPA acknowledges the receipt of this comment. EPA, in this action, is finalizing its original intention and designating as nonattainment of the 2015 ozone NAAQS the 5-county Milwaukee area as per the TSD for the Wisconsin nonattainment areas. In this analysis EPA has done no more than it is tasked with doing, which is to, in accordance with CAA section 107(d), designate as nonattainment all areas with monitor[s] that is [are] violating the 2015 ozone NAAQS and nearby areas with emissions sources (i.e., stationary, mobile, and/or area sources) that contribute to the violation[s]. [This may need to be changed if we receive a final decision from the Administrator directing us to honor Wisconsin's request for statewide attainment or the narrow strips of nonattainment around the monitors, which exclude the proposed Foxconn facility.]

III. Sheboygan (partial) County Area Comments

Comment: Commenters 0238 and 0255 believe the entirety of Sheboygan County should be designated attainment. However, if EPA designates part of the county as nonattainment, commenter 0255 provides a list of roadways which create a narrower nonattainment boundary than EPA's intended boundary (see docket for specific roadways). Commenter 0264 also provides a list of roadways which create a narrower nonattainment boundary than EPA's intended boundary (see docket for specific roadways).

Commenters 0238, 0264, and 0255 believe that the Kohler Andrae monitor in Sheboygan county is improperly sited. Specifically, commenter 0264 indicates that this monitor is upwind of the majority of Sheboygan County sources and dominated by out-of-state transport, and commenter 0255 indicates that it is misplaced according to a 1998 EPA document.[43] Commenters 0238 and 0264 indicate the Haven monitor (as opposed to the Kohler Andrae monitor) is properly sited downwind and measuring air from activity within the county. Commenter 0238 believes the Haven monitor should be the only monitor used for regulatory purposes in Sheboygan County and commenter 0255 believes EPA should disregard the Kohler Andrae monitor. Commenter 0264 indicates that the LADCO modeling (WDNR April submittal) shows the entire state of Wisconsin contributes less than 10% of ozone measured at Kohler Andrae monitor. Commenter 0238 attached the 2017 LADCO white paper on the Lake Michigan Ozone Study[44] to a comment letter indicating that the commenter believes the Kohler Andrae monitor is reading 98% ozone that has been transported from outside Sheboygan County and that Sheboygan County NO_x emissions account for 2% of the total NO_x emissions in Wisconsin.

With respect to Sheboygan County, while WDNR (0300) recommends attainment for the entire state as per the Governor's recommendation, if EPA designates a portion of Sheboygan County as nonattainment, WDNR believes that the boundary should be based on the distance from shore approach and no more than 2.3 miles inland, which is a location consistent with the best-fit line (70 ppb contour) developed by WDNR. If EPA does not set the boundary at 2.3 miles inland, then WDNR believes it should be no more than 2.9 miles inland, which is the location determined by comparison of design values at Sheboygan's two ozone monitors as described in DNR's April 2017 TSD. Wisconsin does not want the boundary to be 3.2 miles inland (based on the location of the Haven monitor) nor based on roadways like EPA intends, since the Haven monitor has a design value of 69, indicating to Wisconsin that the attainment level air quality would be found between this monitor and the lakeshore and that that any nonattainment area boundary should be to the east of this monitor. Wisconsin also states that Sheboygan County ozone concentrations are heavily impacted by out-of-state transport and unfavorable meteorological and geographic factors and are not affected by local sources of emissions. Industrial emissions comprise less than 10% of county NO_x and VOC emissions and are already well controlled. The county's largest source of NO_x emissions (Edgewater Generating Station) has significantly reduced emissions since 2011 and forecasts even more dramatic reductions in future years.

Response: Wisconsin's best-fit line reaches 70 ppb at an inland distance of 2.3 miles. However, as explained in the responses above, the best-fit line alone is not a valid tool for determining the geographic extent of the nonattainment area. Therefore, the 2.3 and 2.9 mile inland distances are inappropriate since, they do not have a credible basis. As explained in EPA's 120-day TSD, the synthesis of the 5-factor analysis including the location of the attaining monitor at 3.2 miles inland in conjunction with the lake breeze inland penetration distance analysis conducted by WDNR, suggest that the nonattainment area is generally occurring east of the attaining monitor. By capturing the roughly 3.2-mile area, EPA has somewhat conservatively captured the extent of the nonattainment area including

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[43] U.S. Environmental Protection Agency, "GUIDELINE ON OZONE MONITORING SITE SELECTION." EPA-454/R-9 8-002, August 1998.

[44] Pierce, B., Kaleel, R., Dickens, A., Bertram T., and Stanier, C., Kenski D.: White Paper: Lake Michigan Ozone Study 2017 (LMOS 2017), http://www.ladco.org/, 2016.

the majority of the area precursor emissions, which, based on the evidence (see other responses above), have the potential to form ozone.

Regarding the comments referring to the siting of the violating monitor, 40 CFR part 58, Appendix D, provides network design criteria including site types and siting scales (Table D-1). WDNR has designated the Sheboygan-Kohler site as a regional transport/maximum ozone concentration site and the Sheboygan-Haven site as a population exposure site in both its EPA-approved annual network plan and in EPA's Air Quality System. Wisconsin's annual network plan was approved by EPA on September 1, 2017 and includes statements affirming compliance with 40 CFR part 58, Appendix E, Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring for each site in Wisconsin's ambient monitoring network, including the Sheboygan-Kohler monitoring site and the Sheboygan-Haven monitoring site. The upwind urban region (as described in the 1988 guidance) for the Sheboygan-Kohler regional transport/maximum ozone concentration site is not specified in the annual network plan. However, one could surmise that the urban region could be the Milwaukee area based on the following: Ozone is a secondary pollutant formed over some time and space from the sources of ozone precursor emissions. It is, therefore, likely that it is measuring ozone formed predominately from upwind precursor sources in Milwaukee which is about 60 miles south of Sheboygan, and in the Chicago area, which is farther south. With respect to LADCO's source apportionment modeling, a 10% contribution is approximately 8 ppb of ozone.

Manitowoc (partial) County Area Comments

Comment: WDNR (0300) estimated the geographic extent of nonattainment is no more than 2.9 miles inland for Manitowoc County (other comments regarding Manitowoc were summarized and addressed above).

Response: As explained previously, Wisconsin's best-fit line (70 ppb contour) is not an appropriate tool for determining the extent of the nonattainment area, the only reliable information for shrinking the full county area down to a partial county area is from the synthesis of the 5-factor analysis of the adjacent Sheboygan County area determination which heavily relied on the Sheboygan County inland (Haven) monitor data design value relative to the Sheboygan County lakeshore (Kohler Andrae) monitor design value in conjunction with WDNR's lake breeze inland penetration distance analysis specific to these monitors and which could not have been conducted without the data from these monitoring sites. EPA determined the conclusion for the Sheboygan (partial) County area could reasonably be extended north to adjacent Manitowoc County. In reducing the Manitowoc area from a full county to a partial county, EPA conservatively included the majority of Manitowoc County emissions sources, as it did with the Sheboygan County emissions sources. It is important to reiterate that the only reason EPA was able to justify honoring Wisconsin's request to reduce the size of the Sheboygan County area from a full county to a partial county area is the existence of the second ozone monitor in Sheboygan county which is attaining the standard coupled with WDNR's lake breeze inland penetration distance analysis specific to the two Sheboygan County monitors. EPA liberally extended this reasoning to Manitowoc County (despite Manitowoc not having an inland attaining monitor), since Manitowoc County is adjacent to and immediately north of Sheboygan County.

IV. Door (partial) County Area Comments

Comment: Both WDNR and the Door County Administrator (0235) agree that the Door County area should be a rural transport area, but that the nonattainment area boundary should be the Newport State Park boundary. Commenter 0235 does not believe (based on WDNR analysis) that ozone penetrates farther inland than the Newport State Park Boundary. Commenter indicates that EPA HYSPLIT trajectories indicate all emission tracks causing the violation at the Door County monitor to be outside of the Door County land base except when the emissions reach Newport State Park. Commenter adds, "The photochemical model projections of 2017 design values along the western Lake Michigan shoreline prepared by LADCO project the entire Door County land mass to be outside of the nonattainment area. (See: Figure 4.1 at page 16 of DNR's Technical Support Document.)" Commenter is concerned about Door County economy which is heavily dependent on tourism. Commenter wants the nonattainment boundary to be the boundary of the state park. WDNR asks EPA to exclude all the offshore islands in Door County since WDNR believes there is no recognized benefit to designating them as nonattainment and indicates that EPA has similarly excluded islands from its nonattainment area designations for Ventura County, California for the 2008 ozone NAAQS (insert citation). Supporting information provided by WDNR includes the following: Only two of EPA's 100 m back trajectories passed over Door County, with the remainder passing over the lake indicating that the elevated ozone levels measured at the ground level at the Newport monitor result from air being transported over the lake from the south. Door County emissions are low and most of these emissions come from sources that the state cannot control: 53% of NO_x from commercial marine vessels on Lake Michigan and 61% of VOC emissions from recreational vehicles and pleasure craft.

Commenter 0235 specifically comments on concerns about negative public perception of poor air quality and the local economy which is heavily dependent on tourism. (maybe move this and lump together will all area comments regarding economic concerns and business operations and growth)

Response: EPA has conservatively (smallest area possible based on available credible information) estimated the geographic extent of the nonattainment area to be the northern portion of Door County. Historically the entire county has been designated nonattainment. Commenter 0235 indicates, "The inland penetration (based on the Wisconsin DNR's technical data and analysis) does not extend beyond the Newport Sate Park boundary." To be clear, the WDNR inland penetration analysis that EPA considered in our 5-factor analysis for the Sheboygan area was done specifically for Sheboygan County. There is not a second monitor in Door County with which to conduct an inland penetration distance analysis. Further, unlike Sheboygan, Door County is a peninsula surrounded by water. EPA's HYSPLIT back trajectories provide evidence that Door County is impacted not only by over-the-lake transport but also by overland transport indicating that the entire northern portion of the county experiences nonattainment air, not a narrow strip along the eastern coastline of the county nor a 3.7 square mile area confined by the state park boundary. The HYSPLIT trajectories densely cover the northern portion of the county and to a lesser extent the southern portion of the county, indicating the entire northern portion of the county experiences the nonattainment air that has been recorded at the monitor. There is no evidence to indicate the nonattainment air is limited to the boundary of the state park.

Insert a paragraph explaining that EPA will remove the offshore islands from the nonattainment area consistent with what we did in Ventura CA for 2008 ozone???—waiting for direction/decision from leadership on this

V. Comments from public health and environmental stakeholder groups

Comment: Several public health groups and an environmental law and policy group commented on EPA's Wisconsin intended nonattainment areas, including the American Lung Association, the American Public Health Association, and the Alliance of Nurses for Healthy Environments, collectively (0257) and the Environmental Law and Policy Center (0262). Commenter (0262) agrees with EPA's intent to designate the Door, Sheboygan, and Manitowoc partial county areas as nonattainment. However, since Door, Sheboygan and Manitowoc counties are primarily affected by transported air pollution from the Chicago metropolitan area, commenter (0262) questions why EPA is recommending the counties be designated as stand-alone nonattainment areas rather than as part of the Chicago IL-IN-WI multistate area. Commenters (0257) believe that Sheboygan County, Manitowoc County, and Door County, Wisconsin, should be included as part of the Chicago IL-IN-WI nonattainment area since the data indicate these areas receive transported emissions from the Chicago metro area. Commenter indicates, "EPA's current proposal limits these counties' ability to ensure that they meet the standard quickly. EPA argues that these represent areas outside of the Chicago metropolitan area, so they separate the designations. With limited sources under their authority, these counties cannot take actions individually to control or reduce emissions coming into these counties. Fortunately, if national measures including the 2016 Cross-State Air Pollution Rule and the 2014 Tier 3 standards remain in effect, these counties will have federal help to meet the standards. However, if included as part of the larger metro area planning and implementation, those counties would have a stronger voice in ensuring improvements to protect the health of their residents." Commenter (0262) notes that even though the Milwaukee area is between these northern counties and the Chicago metropolitan area, back trajectory analyses show that they are affected by transport from the Chicago area. Commenter indicates Door County is sufficiently remote that an individual designation may be more appropriate; however, the commenter (0262) asks that EPA consider this issue for all three counties.

Response: EPA acknowledges the receipt of these comments. While it might make sense to include Sheboygan and possibly Manitowoc in the Milwaukee area (not the Chicago area since it is not contiguous with Sheboygan and Manitowoc), EPA carefully considered this option and decided to maintain its long-standing method of starting with the larger of the CSA or CBSA as the initial area of analysis for each area with violating monitor(s).[45] Sheboygan and Manitowoc are each single county areas. The state has the discretion to make decisions regarding how best to target attainment planning for its nonattainment areas including its single (partial) county areas that are upwind of in-state urban areas and EPA stands ready to work cooperatively with the state in these efforts. As for contributions from out-of-state upwind areas (e.g. the Chicago area), the transport provisions of the Clean Air Act require each state to analyze their contributions to downwind nonattainment and maintenance receptors.
[Maybe ask OAQPS if they have additional boilerplate response text to insert here for ozone transport related responses and insert footnotes to the appropriate sections of the CAA and or EPA ozone transport good neighbor SIP guidance documents]

Comment: Commenter 0257 emphasizes that EPA needs to act swiftly to formally designate nonattainment areas. EPA's actions have resulted in unnecessary and prolonged delay in areas taking steps to protect their residents and develop a successful plan to reduce emissions.

[45] https://www.epa.gov/ozone-designations/epa-guidance-area-designations-2015-ozone-naaqs

The American Lung Association, the American Public Health Association, and the Alliance of Nurses for Healthy Environments urge EPA to allow no further delays to complete this review and protect the health of all Americans.

Response: By this action, the EPA is finalizing the designation for all areas except one and EPA will complete the designation process by July 17, 2018.